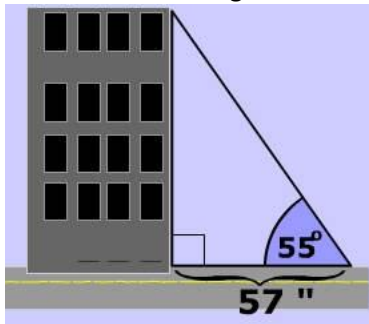


1. A communication tower is some distance from the base of a 70 metre high building. From the roof of the building, the angle of elevation to the top of the tower is  $11.2^\circ$ . From the base of the building, the angle of elevation to the top of the tower is  $33.4^\circ$ . Determine the height of the tower and how far it is from the base of the building. Round to the nearest metre.
2. A mountain is 850 metre high. From points on either side of the mountain, the angles of elevation to the top of mountain are  $67^\circ$  and  $54^\circ$ . Calculate the length of a tunnel the runs from either side of the mountain.
3. Karen and Anna are standing 23 metres away from the base of a 29 metre high house. Karen's eyes are 1.5m about ground and Anna's eyes are 1.9m above ground. Both girls measure the angle of elevation to the top of the house. Which girl has the larger angle of elevation? How do you know?
4. The angle of elevation from the roof of a 20m building to the top of another building is  $40^\circ$ . The 2 buildings are 18m apart at the base. How tall is the taller building?
5. A regular hexagon has a perimeter of 54cm. Calculate the area of the hexagon.
6. At 57" from the base of a building you need to look up at  $55^\circ$  to see the top of a building. What is the height of the building?



7. A pilot is traveling at a height of 30,000 feet above level ground. She looks down at an angle of depression of  $6^\circ$  and spots the runway. As measured along the ground, how many miles away is she from the runway? Round to the nearest tenth of a mile.
8. A ship is on the surface of the water, and its radar detects a submarine at a distance of 238 feet, at an angle of depression of  $23^\circ$ . How deep underwater is the submarine?

13. An observer on the ground looks up to the top of a building at an angle of elevation of  $30^\circ$ . After moving 50 feet closer, the angle of elevation is now  $40^\circ$ . Consider the diagram below:

